Atomic Raid Fire Hazards Studied

BERKELEY — Fire caused by a nuclear attack is unpleasant to contemplate, but it is not likely that such a fire would incinerate hundreds of square miles instantly in one burst of flame.

From the standpoint of fire, it is not correct to assume that civil defense measures are impossible or even impracticable, according to a report recently completed by the Pacific Southwest Forest and Range Experiment Station of the U.S. Forest Service.

The study was made at the request of the Department of Defense, Office of Civil Defense.

Researchers from the Berkeley station were asked: What would be the course of a conflagration? How fast would it spread and where and when would it stop? Can we describe the mass fires that fire services must combat after nuclear attack or natural disaster?

SCATTERED FIRES

During the 15-month study it was determined that the most likely situation in the first few hours following a nuclear detonation would be one in which several mass fires were scattered throughout a much larger fire area.

Within any likely radius of ignition by a bomb, some areas would be free of kindling fuels, some shielded from the heat by hills and buildings, and some screened by tree and brush foliage.

Clouds also would affect the ignition patterns, the fire experts said. Even within the area initially ignited, differences in fuel arrangement and exposure would influence the rate of fire buildup. Some areas would have burned out before fires in other areas have merged to form a mass fire.

After a nuclear explosion, the countryside would be sprinkled with mass fires, some moving and some stationary, and interspersed with unburned and burned out areas, the report says.

Survival rates in this situation would be high except in the immediate firestorm areas; there, heat-resistant shelters with independent air supplies would be necessary for survival.

In preparing the survey, the experiment station reviewed literature on fire spread, analyzed reports of 1,621 large wildland fires and 254 urban conflagrations ranging from the Great Chicago Fire of 1871 to the Coal Pier Fire of 1961, interviewed more than 30 rural and city fire chiefs and corresponded with mass-fire experts in Canada, Australia and Japan.

WIDELY SPREAD

The researchers reported that mass fires following nuclear attack may be larger than any heretofore known.

But, they said, the behavior and spread of such fires will be governed by the same factors, acting the same way, as have affected large fires in the past.

Results of the research have been published by the U.S. Department of Agriculture in a 110-page book.

Cooperating in preparing the publication were Craig C. Chandler, fire behavior specialist; Theodore G. Storey, forest fire research specialist, and Charles D. Tangren, mathematician.

U.S. Releases Map Detailing Fallout Peril

E TR E DEC 27 1962

By FRED GARRETSON

The U.S. Defense Department has released — perhaps inadvertently—the most complete map of atomic "war game" results ever made public.

It shows the "statistically probable" fallout radiation doses various parts of the United States could expect to get during the first two days of an atomic attack.

The map is called "highly accurate and highly dependable" by Pentagon spokesmen, who say it was prepared by computers which had digested voluminous weather information and all available classified data about Russian weapons and American defenses.

Defense planners then had computers play out 100 "war games" of all types, trying to predict in advance what the fallout patterns would be if war ever came.

The computer technique is similar to a football coach's pre-game "skull session" in which strategy is plotted on the basis of scouting reports and knowledge of his own team.

The map has never before been published, said top Pentagon spokesmen. The Trjbune obtained the map from regular sources and withheld publication until officially assured that it would not violate national security.

The map, and accompanying technical data which has also never been published, showed the following "statistically probable" effects:

1—Twenty states east of the Mississippi River and large parts of California would "probably" be subjected to accumulated radiation doses so high that new low-standard fallout shelters would be death traps and even standard-design family shelters could not prevent serious illness.

2—It also showed three computer-predicted "no fallout" areas—two of them in California—which would be upwind from all expected targets except under unusual weather conditions.

3—Because of prevailing winds which blow from West to East, the eastern United States is in far greater peril from radiation than Western States.

Spokesmen hastened to point out that "no one can predict the exact attack situation or wind patterns on the day of an attack. One of those 'clear' areas could become a radiation 'hot spot' if the winds changed."

They predicted that in an all-out attack on military and civilian targets 110 million Americans would die quickly, 30 million could survive without shelters, and another 60 million could be saved by a nationwide shelter program.

Similar maps have been published in the past, but never with predictions of fallout intensities included. Past maps gave no indication whether predicted radiation levels would be as low as an X-ray dose or high enough to kill almost instantly.

The map and technical data became public when they were included in a slide used as a training aid in a "hastily-prepared" course training architects and engineers in shelter-building techniques.

James Roebke, Pentagon official in charge of the course, ordered the slide "withdrawn from use" in the training program, but not until thousands of professional men capable of understanding the technical data had viewed the slide in classes offered throughout the nation last month.

The computers predicted "black" areas would experience a two-day accumulated radiation dose of 20,000 roentgens due to overlapping fallout patterns blowing in from upwind target areas. This is 40 times the dose required to kill half the population.

Most of the country would get 5,000 roentgens in two days. Northern Rocky Mountain States would get 1,000 roentgens, double the lethal dose, during the first two days of a war, the computers predict.

The computer predicted as "no fallout" zones the lower Rio Grande Valley, near Laredo, Tex., the Central California coast between Hearst Castle at San Simeon and Monterey, and a 300-mile coastal strip between Fort Ross, Calif., and Coos Bay, Ore.

However, the "statistical probability" that any area would get the radiation dose predicted by the computers is subject to numerous "variables," officials said.

For example, the map lists the Bay Area as a "black" maximum danger zone because the computers figured "all types" of attack patterns, including enemy strikes on population and industrial centers.

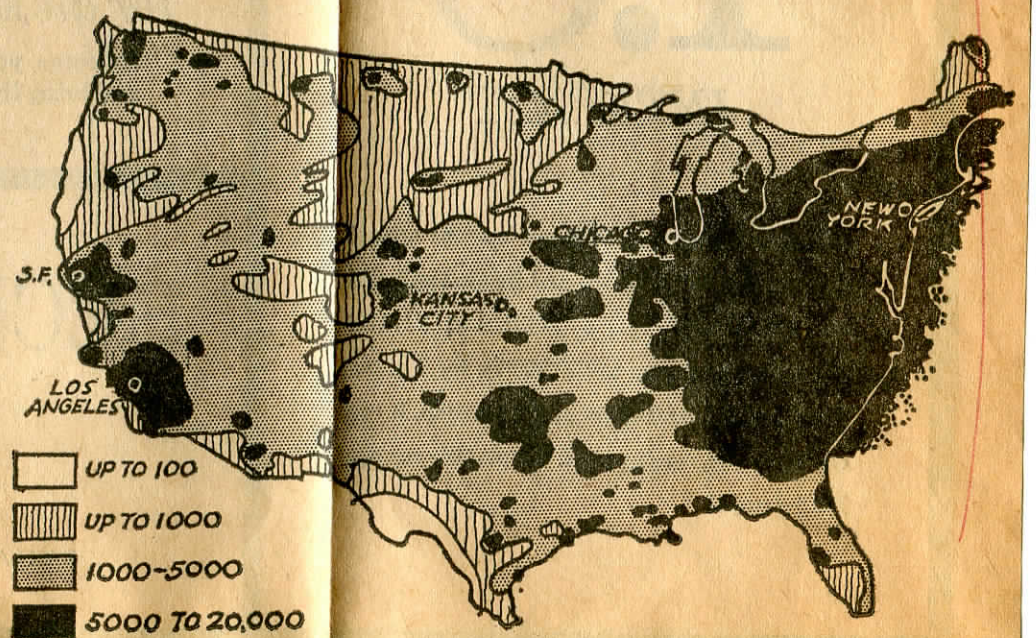
However, the current Pentagon thinking is that a "no cities" war, in which only missile and bomber bases capable of retaliating against the enemy homeland would be hit, is highly probable. Under this strategic concept, cities would be held as "hostages" to force a surrender after missile and bomber bases are destroyed.

State Disaster Office studies show that in a "no cities" war Travis Air Force Base is the most serious danger to Oakland, but even then heavy fallout would blow towards Oakland only 30 per cent of the time.

Spokesmen said map colors indicate the maximum fallout that is "statistically probable" in various areas. They said that in any given attack the actual accumulated two-day dose would be lower than predicted by the map in many areas.

In a black area the map data says a minimum shelter "Protection Factor" of 80 is required to prevent deaths.

The map says a minimum protection factor of 200 is required to prevent sickness to shelter inhabitants in "black" areas, but most recommended designs of family fallout shelters have a protection factor of only 100.



MAP SHOWS "PROBABLE" FALLOUT PATTERN AFTER A-ATTACK
"War Game" computers predict radiation dose in Roentgens

Bay Radioactivity Defenses Set Up

Atomic weapons

The Atomic Energy Commission has formed a task force of experts to protect Bay Area residents against release of radioactive materials in highway, airplane or railroad accidents.

In an announcement made jointly by the AEC in Washington and at its Oakland office, the AEC said that it is possible accidents in shipment "could result in release of radioactivity in such manner and quantity as to be hazardous to the public."

The Oakland area is one of the principal AEC shipping points because of research facilities at Livermore and Berkeley. Military bases in this region also have atomic weapons in storage. Some atomic weapons may soon be almost in residential areas themselves, for the Army has announced that some Nike bases here will be converted to the Hercules missile, an antiaircraft missile which has an "atomic capability."

IN AIR DAILY

Aircraft carrying atomic weapons are over the Oakland area daily on training flights.

In its announcement today, the AEC said that a corps of experts, some from the University of California Radiation Laboratory, is now available to "for use in helping to protect the public in the event of such incidents." And it acknowledged that accidents have already occurred — but without discharge of radioactivity.

"Although containers for radioactive materials in shipment are designed to withstand most accidents of this type, a rupture of the container could result in radioactive material escaping to the surrounding environment," the AEC said.

The teams of experts, the AEC said, "are trained and equipped to monitor radioactive materials and advise local officials and physicians on the extent of radiation hazards and the steps that should be taken for the further protection of public health and safety, and they have now been integrated into a network. All areas of the continental U.S. are covered."

MILITARY BASES

Military bases also have trained teams, the AEC said.

Makeup of the AEC teams responding to what the agency called an "incident" will be determined by the "type of incident with which they have to deal."

The teams "will include scientists, engineers and physicians, who have had training and experience in the handling of radioactive materials."

Experts Portray H-War Fire Bath

In a thermonuclear war, civilization would die in a bath of fire, and any survivors would soon perish for want of water.

With grim scientific cadence, biophysicists and physicians yesterday marshaled an impartial body of data accumulated in years of atomic bomb testing to describe man's chances of survival in modern warfare.

They presented their statistics before a symposium on medical problems of modern warfare and civil disaster which has been meeting this week at the U.S. Naval Radiological Defense Laboratory, San Francisco.

Dr. Nello Pace, world famous University of California physiologist, said scientific studies show that man's greatest problem of survival was water.

GRIM FUTURE

With no known way of decontaminately water supplies of radioactivity, survivors must either turn to protected sources or walk to uncontaminated reservoirs.

And, if the temperature is 80 degrees Fahrenheit, and the survivor rests in a shaded spot during the daylight hours, it is possible for him to survive seven days and to walk 110 miles to water before he would expire, the U.C. physiologist said.

Dr. Pace cited the case of a 9-year-old girl survivor of the Hiroshima atomic bombing, who lived through the disaster in a household shelter just 200 yards from ground zero.

She lived to recover from all physical effects that can be clinically measured, Dr. Pace explained.

Dr. Albert R. Behnke, director of medical research at the Navy radiation laboratory, said most victims of a thermonuclear attack would die first from lack of adequate first aid for common shock conditions. With adequate engineering of shelter spaces and proper design of new general use construction, many of the initial deaths could be avoided, he said.

huge hurricane of fire, Strope said.

Similar, but certainly smaller, fire storms have been witnessed throughout man's history, but the most recent were those in Dresden and earlier in Hamburg, Germany during World War II.

So irresistible were the storm's demands for oxygen during the Dresden fire that trees three feet thick were uprooted a mile from the storm column and sucked into the holocaust, the engineer said.

And the air was sucked from raid shelters and replaced with deadly or combustible gases, thus suffocating the inhabitants.

22-MILE REACH

Laboratory and field tests during nuclear testing operations have demonstrated that the heat generated from nuclear devices 22 miles from ground zero has been sufficient to kindle piles of newspapers; rotten grass and leaves and old week structures.

These materials, Strope noted, abound in every American community and constitute the fuse to the dreaded fire storm that will punctuate an atomic or thermonuclear bombing of any American city.

The engineer repeated warnings he made before Congressmen last year: America needs a system of defense shelters that will cost this nation approximately 300 billion dollars

Lt. Col. Gerald M. McDonnel of the Army Medical Corps, described in vivid detail experiments with live pigs subjected to the effects of atom bombing, while tethered behind vast stretches of glass, much like modern Americans live behind today.

The survival problem was shown to be compounded in large metropolitan areas due to the deadly showers of glass that follows a nuclear detonation.

But it remained for Walmer E. Strope, head of the laboratory's military evaluation branch, to describe the terror of gigantic fire storms that would follow if a thermonuclear bomb were dropped over Treasure Island in San Francisco Bay.

1,500,000 DEAD

More than a million and a half of the Bay Area's daytime population would surely die. Some 993,000 in San Francisco, 385,000 in Oakland, 114,000 in Berkeley and 85,000 in Richmond.

The blasted earth in the Bay Area basin would be scorched in one fantastically

Bay 'Critical' A-Bombing Area

Alameda County and five neighboring counties with a population of 2,240,767 are included in the "critical" list of probable targets for atomic attack by the Federal Civil Defense Administration.

The Bay area is grouped under "San Francisco-Oakland" and includes these counties: Alameda, Contra Costa, Marin, San Francisco, San Mateo and Solano.

Other "critical" areas in California are:

Los Angeles area (Los Angeles and Orange Counties), population 4,367,911.

San Diego County, population 556,808.

"Probable" target areas and their population are: Sacramento County, 277,140; San Jose and all of Santa Clara County, 290,547; Stockton and San Joaquin County, 200,750; Fresno County, 276,515; and San Bernardino-Riverside-Ontario, 451,688.

Morticians To Organize For Disaster

Formation of emergency mortuary teams to care for the estimated 262,000 fatalities which would result from an atom bomb attack on the Bay area will get under way immediately, according to the State Office of Civil Defense, Region 3.

Harry H. Stoops of Berkeley, regional co-ordinator for the nine-county Bay area, yesterday announced the appointment of Lloyd H. Truman, Oakland mortician, as assistant chief to head the emergency mortuary service.

Primary functions of the teams will include survey and selection of sites for emergency morgues and cemeteries; prevision of facilities for handling identification and registration of the dead; religious rites and protection of personal property and preparation and burial of bodies, with recording of grave sites and plots.

"In preparing for a major disaster such as an atomic attack, it would be imperative to care for the vast number of dead as promptly as possible," Dr. William W. Stiles, regional chief of the Medical and Health Services Division of the State Office of Civil Defense, stated.

"While it is the earnest hope of all civil defense officials that a major disaster due to atomic bombing will never occur, it would be foolhardy to discount entirely the possibilities," Dr. Stiles added.

Doctors Warned to Build Up Supplies for Atomic Burn Cases

Alameda County's doctors were warned by a top expert in radioactivity last night that an atomic attack would produce thousands of burn victims.

The speaker, Dr. William H. Sullivan, scientific director of the Radiological Defense Laboratory at San Francisco Naval Shipyard, told them coldly to stockpile supplies for the treatment of burns and adopt simple, standardized procedures for their care.

Dr. Sullivan was the first of three speakers in a symposium on atomic warfare sponsored by the Alameda-Contra Costa Medical Association. He spoke to one of the largest medical gatherings ever held here. Some 900 persons attended the first session held at Westlake Junior High School.

HIGH CASUALTIES

Opening his address, Sullivan noted that extremely high casualties occurred in Hiroshima and Nagasaki when the first atomic bombs fell because of the little warning given residents and the "utter chaos and confusion" of city officials.

Fatalities could be cut down, the scientist said, by organization and better protection. He told the doctors that medical aid for victims would have to come from areas at least three miles away from the center of any atomic blast.

Outlining the four possible methods of atomic attack, Sullivan said that "tremendous devastation" is characteristic of all. He said the bomb could be detonated in the air, underwater, underground or on the surface of land.

MEDICAL PROBLEM

Air detonation presents the most serious medical problem, he reported. Casualties could be caused by the initial blast, heat, nuclear radiation and residual radiation.

Heat at the center of an atomic blast reaches between 5400 and 7200 degrees Fahrenheit, Sullivan said. That temperature is so great that at Nagasaki telephone poles more than [illegible] miles away from the blast center were "flash charred."

Commenting on what this might mean to an American city he noted that the Coconut Grove disaster in Boston resulted in between 300 and 400 casualties "which taxed that city's medical facilities to the very limit."

MEDICAL CENTER AREA

Questioned by Dr. Joseph F. Sadusk Jr., the county field medical co-ordinator for civil defense, Sullivan stated that facilities in the Oakland medical center area would not be put out of commission should an atomic weapon be dropped on Outer Harbor targets. He said that minor damage might result to buildings near 40th Street and Telegraph Avenue.

Dr. Dorothy Allen, president of the Medical Association, presided over the meeting. She outlined the recently announced medical civil defense organization of the county and told of its development.

Six Secrets for Survival

1—TRY TO GET SHIELDED

If you have time, get down in a basement or subway. Should you unexpectedly be caught out-of-doors, seek shelter alongside a building, or jump in any handy ditch or gutter.

2—DROP FLAT ON GROUND OR FLOOR

To keep from being tossed about and to lessen the chances of being struck by falling and flying objects, flatten out at the base of a wall, or at the bottom of a bank.

3—BURY YOUR FACE IN YOUR ARMS

When you drop flat, hide your eyes in the crook of your elbow. That will protect your face from flash burns, prevent temporary blindness and keep flying objects out of your eyes.

4—DON'T RUSH OUTSIDE AFTER BOMBING

After an air burst, wait a few minutes then go help to fight fires. After other kinds of bursts wait at least one hour to give lingering radiation some chance to die down.

5—DON'T TAKE CHANCES WITH FOOD, WATER

To prevent radioactive poisoning or disease, select your food and water with care. When there is reason to believe they may be contaminated, stick to canned and bottled things if possible.

6—DON'T START RUMORS

In the confusion that follows a bombing, a single rumor might touch off a panic that could cost your life.

SEVEN RULES TO FOLLOW IN CASE OF ATOM ATTACK

Seven simple rules for individuals to follow in the event of atomic attack are included in "Protection from the Atom Bomb," the Oakland Disaster Council's new pamphlet now being distributed to 25,000 homes by Public School children.

Based on more detailed instructions issued by the state and federal governments, they are as follows:

1—Lie down behind the thickest barrier you can find away from doors and windows, or in any depression in the ground, as a gutter.

2—Get out of and stay away from your automobile.

3—Don't move for at least two minutes after dirt or flying debris has stopped falling.

KEEP COVERED

4—Try to cover yourself with a tarpaulin or blanket or anything at hand.

5—Protect your eyes with your arms. Don't be panicky if the light causes temporary blindness. Normal sight will return in a short time.

6—Stay in your temporary shelter (unless it is badly damaged) until help comes.

7—Do not eat any food or drink any liquid that may have been exposed.

Oakland Public School children in grades one to six began taking the pamphlets home to their parents Friday. All of the children will receive them by the first of the week, it has been announced by Forrest Michell, administrative assistant of the Board of Education.

VOLUNTEER NEEDS

Included in each pamphlet is a card listing the Oakland Disaster Council's volunteer needs as 2500 auxiliary volunteer police, the same number of auxiliary volunteer firemen and 10,000 block wardens.

Training classes in atomic defense, first aid and other phases of defense will be organized as volunteers sign up, according to Lin Lueddecke, assistant to chief warden Robert W. Crawford.

Volunteers may register at the Plaza Hut, 14th Street and San Pablo Avenue, at any Oakland police station, fire station or library.

BAY AREA TOLD TO READY NOW FOR ATOM WAR

The Oakland-San Francisco Bay area would be one of three key atom bomb targets in California if war should break out.

That was the warning voiced yesterday by Paul Larsen, director of civilian mobilization for the National Security Resources Board, to members of six advisory committees of the California Disaster Council.

The committees, composed of more than 100 experts in medicine, firefighting, communications, law enforcement and utilities, met in Sacramento at the request of Gov. Earl Warren.

PRIMARY TARGETS

The other two California areas which the Federal government considers prime A-bomb targets, Larsen said, are the Los Angeles and San Diego regions.

Planning what to do in case a bomb should strike those localities is the job of the individual cities and not of a "Washington bureaucracy," the civilian defense director declared.

In that, he was in accord with Warren, who, at the end of the meeting, gave this pledge: "We will not leave a single stone unturned. We will do everything the government asks us to do."

That might be quite a job. According to Larsen's estimate, some 15,000,000 Americans are needed to guard the civilian ramparts in case of major trouble. And if atom bombs do begin to fall, he said: "Every man must be chosen to do a job. That's a task."

OFF THE RECORD

Some of the things Larsen told the council advisors were hush-hush enough for him to ask newsmen not to take notes.

The Federal official said Washington will help with the money and the planning but that it is not up to Washington to handle the wounded or enforce law, fight the fires or turn off the gas in a bombed city.

Larsen talked a lot about the atom bomb.

He said a way has not yet been found to wash away the lingering radioactivity after a bomb blast.

Your house may be left standing, he said, and it may be safe for living for 90 days. But it might injure anyone living in it for two years, said Larsen. Larsen said there is hope for more knowledge to come out of cur-

Continued Page 5, Col. 2